

ABSTRACT OF THE DISCLOSURE

A workpiece is processed in a chamber by striking a plasma in the chamber, treating the workpiece by cyclically adjusting the processing parameters between at least a first step having a first set of processing parameters and a second step having a second set of process parameters, wherein the plasma is stabilized during the transition between the first and second steps. These steps may comprise cyclic etch and deposition steps. One possibility for stabilizing the plasma is by matching the impedance of the plasma to the impedance of the power supply which provides energy to the plasma, by means of a matching unit which can be controlled in a variety of ways depending upon the step type or time during the step. Another possibility is to prevent or reduce substantially variation in the pressure in the chamber between the first and second steps.